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ABSTRACT

Prescription Learning is a multi-media diagnostic prescriptive program providing individualized instruction using six instructional strategies. Nine elementary schools and four middle schools in the Portland Public School District used Prescriptive Learning to provide supplemental reading and math instruction to low-performing students. Selected by Chapter 1 eligibility requirements, 1,223 students, in grades K-8, received services (973 students in reading and 779 in math). This report evaluates the Prescriptive Learning program by comparing the achievement gains of 1983-84 program students with: (1) other district Chapter 1 students; (2) all district students; and (3) 1982-83 program students. The Comprehensive Tests of Basic Skills, (Grade 2) and the Portland Achievement Levels Tests (Grades 3 to 8) measured student achievement. In addition, program coordinators were interviewed about implementation procedures and students' opinions were surveyed. Findings include: (1) generally greater achievement gains were achieved by first year Prescriptive Learning students over their pre-program year; (2) both Prescriptive Learning and other Chapter 1 treatments assisted students; (3) two-year students' achievement growth rate was lower than one-year students; and (4) computers were the most popular lab station with students. Appendices contain: (1) new primary reading skills continuums; (2) reading materials evaluations; and (3) growth tables for Prescriptive Learning and Chapter 1 students by grade. (BS)

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1983-84 EVALUATION REPORT

PRESCRIPTION LEARNING IN THE PORTLAND PUBLIC SCHOOLS

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October 1984

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INTRODUCTION

Prescription Learning is a multi-media diagnostic prescriptive program that provides individualized instruction through the use of six instructional strategies. Nine elementary schools and four middle schools in the Portland School District used Prescription Learning to provide supplemental reading and math instruction to low-performing students.

The diagnostic, prescriptive and instructional procedures used in Prescription Learning were specified by program guidelines and were essentially identical for all schools. Prescription Learning students were administered either the SRA Reading Test or the Placement Test, which was developed by Prescription Learning, at the beginning of the year. The results provided a Starter Prescription that placed students in the appropriate level on a skill continuum and specified which skills in the continuum the student needed to master. A more detailed Individual Prescription, also based on results from the placement tests, was sent from Prescription Learning Corporation to the schools after about two weeks. Students worked on the Starter Prescription until the Individual Prescription arrived.

The Individual Prescription specified no more than four objectives not yet mastered at the student's skill level and the instructional strategies for each objective. Students received a copy of the prescription and were either directed into an instructional strategy or permitted to choose the instructional strategy with which to start. Students usually completed all instructional strategies in each objective before taking a "hands-on" test which measured those objectives the student had yet to master and objectives not yet tested. Students are considered to have mastered the objective when they correctly answer two of three questions per objective. The results from the "hands-on" test updated the student's Individual Prescription.

ORGANIZATION OF PRESCRIPTION LEARNING PROGRAMS

Student Selection

Students were selected for the Prescription Learning program based on Chapter I eligibility requirements (i.e., a P-score of 43 or below and/or teacher judgment). Additional criteria were established at two schools which had the choice of placing students in either Prescription Learning or other Chapter I activities. One school exercised the option in reading, while the other had the option in both reading and math. The additional criteria did not change the prerequisite that all students first met Chapter I eligibility requirements.

Grades Served and Number of Students

The Prescription Learning program served students in Grades K-8. A total of 1,223 students received services in Prescription Learning: 973 students in reading and 779 in math (See Table 1).

Staff

Each school's Prescription Learning program was staffed by at least one teacher. Table 2 shows the number and FTE of teachers and aides per school.

Training

As specified by the 1983-84 contract, Prescription Learning Corporation provided two workshops for teachers and aides. One workshop focused on showing teachers how to introduce their own lesson plans into the computer to be used as prescriptions for specified skill deficiencies, while the second workshop focused on teacher-directed instruction. On-site training sessions were provided to schools new to the program. In addition, teachers attended a meeting at the beginning of the year to discuss procedures and program improvements. During the year, the Area Director or Technical Consultant from Prescription Learning Corporation made on-site visitations every other week to review diagnostic and prescriptive procedures and answer questions.

Table 1

Prescription Learning Schools,
Grades, and Number of Students in Each Subject[1]

School	Grades	Number of Reading Students	Number of Math Students	Total Number of Students (Unduplicated)
Applegate	K-5	59	59	59
Beach	K-5	114	121	123
Buckman	K-8	109	84	117
Clarendon	2-4	63	41	77
George	4-8	56	44	64
Humboldt	4-5	32	38	43
Kellogg	6-8	96	73	104
Meek	1-5	48	10	51
Ockley Green	6-8	106	120	122
Peninsula*	1-8	68	35	81
Sellwood	5-8	25	80	94
Vernon	1-5	122		122
Whitaker**	6-8	75	74	82
Total		973	779	1223

1 Grant High School's Prescription Learning Program was not included in the evaluation.

* Data for Peninsula School were not included in the interpretation because it is a year-round school and the number of days between the pre-test and the post-test were not the same as the other schools.

** A total of 166 students were served in the Whitaker Prescription Learning: 153 students in reading and 154 in mathematics. However, since some students attended the PL program for only one or two quarters because they also received instruction in the Educational Developmental Laboratory (EDL) or Math Resource Room, only 82 students (75 in reading and 74 in math) are included in Table 1. Only students who were in Prescription Learning and who were not in EDL are included in the report and achievement data.

Table 2

Number and FTE of Teachers
and Aides in Prescription Learning Schools

School	Teachers		Aides	
	Number	FTE	Number	FTE*
Applegate	1	1.0	1	0.5
Beach	1	1.0	1	0.45
Buckman	2	1.3	2	0.6
Clarendon	2	1.6		
George	1	0.5	1	0.5
Humboldt	1	0.5	1	0.25
Kellogg	1	1.0	1	0.5
Meek	1	0.5	1	0.5
Ockley Green	1	1.0	1	0.5
Peninsula	1	1.0	1	0.5
Sellwood	2	1.0	1	0.5
Vernon	1	1.0	1	0.5
Whitaker	1	1.0	3	0.5
Total	16	12.4	15	5.8

* The formula used to determine Aide FTE is an administrative one in which 7 hours = 0.5 FTE

Equipment

Prescription Learning programs use a variety of instructional media equipment as part of their teaching strategies. Table 3 shows the type and number of instructional equipment used at each school. A total of 57 computers were used with either a single and/or dual disk drive accompanied by a printer. In addition, most schools had one or more each of Dukane readers, Hoffman readers, card readers, and tape players.

Table 3

Equipment in Prescription Learning Schools

School	Computers						Disk Drive		Printer	Dukane Reader	Hoffman Reader	Card Reader	Tape Player
	Commodore					Apple							
	VIC20	8K	16K	32K	64K	IIE	Single	Dual					
Applegate	1			4			3	1	1	2	2	1	1
Beach	1			4			3	1	1	1	2	1	1
Buckman	1			3			2	1	1	2	1	1	2
Clarendon	1			3			2	1	1	2	1	1	2
George	2			1	3		4	1	1	3		2	2
Humboldt	1			3			2	1	1	2	1	1	2
Kellogg				1		3		4	1	3	3		2
Meek	1			3			2	1	1	2	2	1	1
Ockley Green		4		1				1	1	3		1	4
Peninsula	1			3			2	1	1	2	2	2	1
Sellwood			3	1				1	1	3	1	1	2
Vernon	1			3			2	1	1	2	1		2
Whitaker		3		1				1	1	3		2	5
Total	10	7	3	31	3	3	22	16	13	30	16	14	27

PRESCRIPTION LEARNING CURRICULUM

New Materials

There were three new major sets of materials introduced during 1983-84: Class II, Orbit Primary, and Learning Tree. Existing Class materials, presented by cassette, were modified to allow more interaction and branching and were converted to disc. Although this new version, called Class II, includes some new materials, overall, it covers the same objectives as the earlier Class materials. One restriction of Class II is that it requires a capacity of 32K. Thus, it could not be used at Whitaker, Ockley Green, or Sellwood, which have 8K and 16K computers.

Orbit Primary materials were introduced at eight schools. They provide additional materials to the objectives already included in the Prescription Learning reading and math skills continuums, but do not address new objectives. Learning Tree materials were introduced at five schools and covered reading, math, and readiness skills. As with Orbit Primary, the Learning Tree materials do not cover objectives outside the Prescription Learning skills continuums.

Curriculum Changes

Prescription Learning introduced a refinement of the existing reading continuum. The refinement is a new continuum in reading at the primary level which subdivides into four levels, one at each grade level. (See Appendix A)

Curriculum Match

The 1982-83 Prescription Learning evaluation report summarized the findings of a match conducted between the Prescription Learning curriculum and the goals tested on the Portland Achievement Levels Tests. The match included materials that were in use in 1982-83 as well as materials to be introduced in 1983-84. The report of the match stated: "there is a reasonable match for reading goals, a real disparity of coverage and focus for mathematics goals, and an extremely poor correspondence in language usage goals." In 1983-84,

the District conducted another study to verify the match between the Prescription Learning curriculum and the goals measured by the Portland Achievement Levels Tests in reading and language. (A match was not conducted for mathematics.) The 1983-84 study went one step further than the first by correlating some of the instructional materials in Prescription Learning with the PALT goal structure. The original study only matched the objectives purported to have been covered by materials in Prescription Learning with the PALT goal structure.

The task for determining a match between the Prescription Learning materials and PALT goal structure involved one rater who reviewed samples of instructional materials from each of seven sets of materials used at two sites (one middle school and one K-8 school that served students in Grades 5 to 8). The goal of the study was first, to correlate the materials with the PALT goal structure, and second, to determine whether or not the material prepared a student to master the correlated curriculum objective and PALT goal. Thus, although materials might be available for a goal, it may be judged as not sufficient to permit the student to master the correlated PALT goal.

The results of the study were consistent with the findings of the 1982-83 study. (See Appendix B for reading match.) Thus, in reading, although materials or adequate materials were not available for some goals, overall, there was an adequate or reasonable match. In language usage, results of the matching were essentially unchanged; i.e., there was a poor correspondence between the Prescription Learning language arts curriculum and PALT goal structure.

EFFECTS OF PRESCRIPTION LEARNING PROGRAM

The evaluation conducted to investigate the effects of the Prescription Learning program compared the achievement gains of Chapter I students who were in the Prescription Learning program with two different populations: (1) District Chapter I students; and (2) all District students. Next, the achievement growth of Prescription Learning students in 1983-84 was compared with their achievement growth in 1982-83. Student achievement was measured by the Comprehensive Test of Basic Skills, Form S, Primary B and C (Grade 2), and the Portland Achievement Levels Tests (Grades 3 to 3) in Fall and Spring of 1983-84.

The District Chapter I program administers the Comprehensive Test of Basic Skills to Grade 2 students for evaluation purposes because the Portland Achievement Levels Tests are not administered below Grade 3. Primary B is administered in the fall and schools are given a choice of administering either Primary B and/or C in the spring depending upon their students' achievement levels. The evaluation also includes an investigation of the relationship between student achievement and weeks in the program. The results are presented according to the following sections: Grade 2, Grades 3 to 8, and relationship between student achievement and weeks in the program.

Grade 2

Table 4 shows the pre and post test means and gains for Prescription Learning and District Chapter I students in Grade 2.[1] Data were collected from six Prescription Learning schools and 35 District Chapter I schools with students in Grade 2. All scores are based on matched fall/spring scores.

1 Results in Table 4 reflect totals for students who took Primary B in both fall and spring and for students who took Primary B in fall and C in spring. The procedure for converting the scores of students who took Primary B in fall and spring to in-level scores was to determine the expanded scale score for the raw score mean and convert the scale score to the corresponding raw score on Primary C. Percentiles were then determined for the average raw score.

Table 4

Grade 2 Fall 1983 and Spring 1984
Expanded Scale Score and Percentiles for
Prescription Learning and District/Chapter I Students

	N	Fall	Spring	Gain
Expanded Scaled Score				
Prescription Learning	72	249	300	51
District/Chapter I	393	254	305	51
Percentile Score				
Prescription Learning	72	17.6	34.0	16.4
District/Chapter I	393	20.1	36.6	16.5

Matched data were available for 72 of the 127 identified second grade Prescription Learning students. Results are expressed in terms of expanded scale score means and corresponding percentiles.

The results indicate that Grade 2 Prescription Learning students made gains equivalent to District Chapter I students, as expressed in expanded scaled scores as well as percentile scores.

Grades 3 to 8

Achievement growth for Grades 3 to 8 was measured by the difference in the fall and spring administrations of the PALT in reading, math, and language usage. The expectation was that first year students would make larger gains in 1983-84, their Prescription Learning or project year, than in 1982-83, their non-Prescription Learning or pre-project year. Data were included for students from 12 Prescription Learning schools who were in the program a minimum of 16 weeks. This represents half of the time between the beginning of school to the post-test date. Results for students in the program for less than 16 weeks are not included in the tables, but they are mentioned in this section of the report.

The results are presented in Tables 5 and 6, showing reading and math data, respectively. The reading results are for students who received reading instruction and math results are for students who received math instruction; however, most students received both reading and math instruction. Tables 5 and 6 show clear and intact total group means for one-, two-, and three-year Prescription Learning students for 1982-83 and 1983-84. In addition, results

Table 5

Reading Standard Deviation, GROW and RATE Means
for One-Year, Two-Year and Three-Year,
Prescription Learning Students;
One-Year and Two-Year Chapter I Students; and
Two-Year Chapter I/Prescription Learning Students by Grade

	Fall 1982	Spring 1983	Fall 1983	Spring 1984	GROW 1982-83	GROW 1983-84	RATE
All Grades							
Prescription Learning							
One-Year	-2.08	-2.42	-2.79	-2.67	-1.27	0.47	1.94
	(86)	(86)	(144)	(144)	(86)	(144)	(77)
Two-Year	-3.34	-3.34	-3.34	-2.84	0.02	1.82	1.65
	(89)	(89)	(92)	(92)	(89)	(92)	(79)
Three-Year	-3.31	-3.50	-3.25	-3.47	-0.90	-1.01	-0.18
	(27)	(27)	(27)	(27)	(27)	(27)	(27)
Total	-2.80	-2.97	-3.03	-2.81	-0.54	0.79	1.50
	(202)	(202)	(263)	(263)	(202)	(263)	(183)
Chapter I							
One-Year	-2.53	-2.84	-2.91	-2.64	-1.05	0.83	1.54
	(395)	(395)	(590)	(590)	(395)	(590)	(286)
Two-Year	-3.25	-3.22	-3.09	-2.96	0.00	0.41	-0.02
	(1134)	(1134)	(1284)	(1284)	(1134)	(1283)	(831)
Total	-3.06	-3.12	-3.20	-3.02	-0.27	0.57	0.38
	(1529)	(1529)	(1774)	(1774)	(1529)	(1773)	(1117)
Chapter I/Prescription Learning							
One-Year (each)	-2.73	-2.83	-3.25	-3.18	-0.33	0.11	-0.05
	(101)	(101)	(160)	(160)	(101)	(160)	(91)

for one- and two-year Chapter I students are presented for comparison. Finally, results for one-year Prescription Learning students who received Chapter I services the previous or pre-project year, 1982-83, are presented separately for comparison. (See Appendix C for data presented by grade)

The results are reported in standard deviation scores, GROW and RATE scores for clear and intact groups. These terms are defined as follows:

Table 6

Math Standard Deviation, GROW and RATE Means
for One-Year, Two-Year and Three-Year,
Prescription Learning Students;
One-Year and Two-Year Chapter I Students; and
Two-Year Chapter I/Prescription Learning Students by Grade

	Fall 1982	Spring 1983	Fall 1983	Spring 1984	GROW 1982-83	GROW 1983-84	RATE
All Grades							
Prescription Learning							
One-Year	-2.62	-2.81	-3.19	-2.62	-0.63	1.72	2.20
	(91)	(91)	(146)	(146)	(91)	(146)	(82)
Two-Year	-3.19	-3.25	-3.36	-2.82	-0.05	1.82	1.69
	(102)	(102)	(99)	(99)	(102)	(99)	(94)
Three-Year	-3.62	-3.00	-3.30	-3.15	2.88	0.70	-1.52
	(27)	(27)	(27)	(27)	(27)	(27)	(26)
Total	-3.01	-3.04	-3.26	-2.75	0.07	1.66	1.48
	(220)	(220)	(272)	(272)	(220)	(272)	(202)
Chapter I							
One-Year	-2.87	-3.02	-3.31	-2.57	-0.40	1.98	1.74
	(403)	(403)	(607)	(607)	(403)	(607)	(294)
Two-Year	-3.38	-3.20	-3.24	-2.93	0.64	0.94	0.32
	(942)	(942)	(1061)	(1061)	(942)	(1061)	(736)
Total	-3.23	-3.15	-3.27	-2.80	0.33	1.32	0.73
	(1345)	(1345)	(1668)	(1668)	(1345)	(1668)	(1030)
Chapter I/Prescription Learning							
One-Year (each)	-3.15	-2.95	-3.25	-2.89	0.68	1.69	-0.31
	(93)	(93)	(128)	(128)	(93)	(128)	(88)

1. Clear and intact groups include students who had fall and spring test scores for a given year (clear) and were enrolled at the same school in the fall and spring (intact). The deviation and GROW scores are based on clear and intact groups, while RATE scores are based on clear groups for each year.
2. Standard deviations are group statistics showing the deviation of a group RIT mean from the means of all RIT means in the District. RIT scores are equal interval, curriculum based scores obtained from the PALT.

3. GROW is an index that represents the amount of achievement growth, based on clear and intact groups, in a given year. It shows the deviation of groups' fall to spring gain from the mean of all school mean gains for each grade level group in the District.
4. RATE is an index that represents the change in the amount of achievement growth in 1983-84 as compared with 1982-83. It also is based on a comparison of the difference in means for a group with the differences for all groups at that grade level in the District. It shows the deviation of year to year groups' gain from the mean of all school mean gains for each grade level group in the District.

The criteria for interpreting the GROW and RATE values are the same, and shown in Tables 7 and 8, respectively.

Table 7

Interpretation of GROW Values

GROW Value		Interpretation
Less than average District growth (Fall to Spring)	-2.0 and below	Negative, significant
	-2.0 to -1.7	Negative, approaching significance
	-1.6 to -0.7	Negative, nonsignificant
	-0.7 to 0.7	Average District growth
Greater than average District growth (Fall to Spring)	0.7 to 1.6	Positive, nonsignificant
	1.7 to 2.0	Positive, approaching significance
	2.0 and above	Positive, significant

The Grades 3 to 8 results are presented in three sections: deviation means, GROW, and RATE. The results are as follows:

Fall and Spring Deviation Means. Overall, the deviation means of all groups in Tables 5 and 6 show Prescription Learning and Chapter I students tend to be the lower performing students in 1982-83 and 1983-84.

GROW. As mentioned previously, GROW represents the standardized amount of growth in a given year. The 1983-84 results of students who were in Prescription Learning for one year and who did not have Chapter I instruction in 1982-83 show growth in reading greater than the District average which is positive approaching significance, and growth in math equivalent to average

Table 8

Interpretation of RATE Values

RATE Value		Interpretation
Less growth in project than in pre-project year	-2.0 and below	Negative, significant
	-2.0 to -1.7	Negative, approaching significance
	-1.6 to -0.7	Negative, nonsignificant
	0.7 to 1.6	Equal growth for two years
Greater growth in project than in pre-project year	0.7 to 1.6	Positive, nonsignificant
	1.7 to 2.0	Positive, approaching significance
	2.0 and above	Positive, significant

District average. Students enrolled for two years had growth in both reading and math greater than the District average, which were approaching significance. Results for students enrolled for three years were mixed showing growth of less than the District average in reading but growth in math greater than the District average, both of which were nonsignificant. When the data from one-, two-, and three-year Prescription Learning students are combined, the results show growth in both reading and math which is greater than the District average, which is positive, nonsignificant for reading and positive, approaching significance for math.

One-year Chapter I students show growth in reading greater than the District average, which is positive, nonsignificant, and show growth in math which is significantly greater than the District average. The Chapter I gains in both reading and math are numerically larger than those for one-year Prescription Learning students, but not to a significant degree. Students enrolled for two years of Chapter I Services show growth in reading equivalent

to the District average and growth in math greater than the District average, but not to a significant degree. The gains are smaller than the gains of the two-year Prescription Learning group, but not to a significant degree. When the data from one- and two-year Chapter I students are combined, the results show that students made growth in reading equivalent to the District average and growth in math greater than the District average, but not to a significant degree.

One-year Prescription Learning students who had Chapter I instruction in their pre-project year show growth in reading equivalent to the District average and growth in math larger than the District average which is positive, approaching significance. The gains are smaller than those of two-year Prescription Learning students in reading but the difference is positive, non-significant, while the gains are equivalent in math. The gains of one-year Prescription Learning following one year of Chapter I instruction are mixed, showing greater growth in math and less growth in reading, both of which were nonsignificant.

RATE. As previously mentioned, RATE represents the change in the rate of achievement growth for one year to the next or for the pre-project to the project years. One-year Prescription Learning students show larger gains in rate of growth in reading in the project than pre-project year which approached significance, and larger gains in math in the project than pre-project year, which were significant. Students enrolled for two years also show larger gains in rate of growth in reading and math in 1983-84 than in 1982-83, which approached significance. Three-year students show equivalent gains in reading over the last two years and a smaller positive, nonsignificant gain in math in 1983-84 than in 1982-83. When the data from one-, two-, and three-year students are combined, the results show that students had larger gains in the rate of growth in 1983-84 than in 1982-83 in reading and math, but not to a significant degree.

One-year Chapter I students show larger gains in reading and math in the project than pre-project year, which was not significant in reading, and approached significance in math. In comparison to the gains of one-year Prescription Learning students, the one-year Chapter I student gains are smaller, but not to a significant degree. Two-year Chapter I students made equivalent gains in reading and math over the last two years. In comparison to the gains for two-year Prescription Learning students, the two-year

Chapter I student gains are smaller and the difference is positive, non-significant. When the data from one- and two-year students are combined, the results show that students made equivalent gains in reading over the last two years, and a larger gain in math during 1983-84 than 1982-83, but not to a significant degree.

One-year Prescription Learning students who had Chapter I instruction in 1982-83, their pre-project year, show rates of achievement growth which were equivalent over the last two years in reading and math. The gains are equivalent to the gains of two-year Chapter I students in reading and smaller than the gains in math, but not to a significant in math. The gains of one-year Prescription Learning students following one year of Chapter I instruction are significantly smaller than the gains of two-year Prescription Learning students in math and they approach significance in reading.

Results of Prescription Learning students, regardless of time in the program (not shown), were calculated. These results include data from students who were in Prescription Learning less than 16 weeks as well as more than 16 weeks. As a group, their results represent a more equivalent comparison to District Chapter I for whose results were included, regardless of time in Chapter I. When the results for Prescription Learning students receiving either reading and/or math were included, regardless of time, the overall results were essentially unchanged. Thus, the exclusion of data for students in Prescription Learning less than 16 weeks does not effect the comparisons with District Chapter I data.

Program Results, 1981-82 to 1983-84

Table 9 provides a summary of the effectiveness of Prescription Learning over the last three years, 1981-82 to 1983-84. The results show that Prescription Learning students made an equivalent rate of growth in the project and pre-project years in both 1981-82 and 1982-83, except in math during 1981-82 where students made greater growth in their project than pre-project year, but not to a significant degree. It was not until 1983-84 that students made a greater growth in the project than pre-project year, which approached significance in reading and was significant in math.

Table 9

Overall Effectiveness of Prescription Learning for
First-Year Students, 1981-82 to 1983-84, As Measured by RATE

		Less Growth in Project than Pre-Project Year (-1.6 to -0.7)	Equal Growth for Two Years (-0.7 to 0.7)	Greater Growth in Project than Pre-Project Year (0.7 to 1.6)	(1.7 to 2.0)	(2.0 and above)
	N	Negative, Nonsignificant		Positive, Nonsignificant	Positive, Approaching Significance	Positive, Significant
Reading						
1981-82	434		X			
1982-83	262		X			
1983-84	77				X	
Math						
1981-82	446			X		
1982-83	140		X			
1983-84	82					X

Program Survey

All Prescription Learning programs were visited from March to May at which time the coordinator was interviewed about program implementation procedures. Five questions were asked. Below are the questions and the schools' responses to them.

Question 1. Is the Prescription Learning instruction correlated with the regular classroom instruction? If so, how?

The question was asked to determine if the program developed a system in which the regular classroom teacher had input on the skills worked on in the lab so that instruction could be coordinated with the skills taught in the homeroom. A majority (eight) of schools indicated that Prescription Learning instruction was correlated with classroom instruction. Of the eight schools, four implemented a formal, systematic method where classroom teachers had input about the skills worked on in Prescription Learning, while four other schools used an informal method. The remaining five schools reported that there was no attempt to correlate Prescription Learning instruction with regular classroom activities.

Table 10 shows the amount of achievement growth during 1983-84 of students in programs according to how Prescription Learning instruction was correlated with classroom instruction (Yes - Formal Method, Yes - Informal Method, Not Correlated). The results show that students in schools that correlated the Prescription Learning program with classroom instruction had larger gains than schools who did not. The results also show no consistent difference between a formal or informal method; however, it is difficult to determine if this actually reflects no difference between the methods or a lack of precise criteria for each method.

Question 2. Does the Prescription Learning Program coordinator conference with regular classroom teacher about individual student performance? If so, how?

Table 10

Reading and Math GROW Means for
First-Year Prescription Learning Students by Correlation
of Prescription Learning Program with Classroom Instruction

	Reading	Math
Yes		
Formal	0.93	1.73
	(129)	(125)
Informal	0.47	1.67
	(151)	(139)
Total	0.68	1.70
	(280)	(264)
No		
	0.24	1.02
	(143)	(136)

Here, an attempt was made to determine if the Prescription Learning teacher met with the classroom teacher to discuss individual student performance in order to facilitate instructional placement and planning.

Twelve schools indicated that they conferenced with the regular classroom teacher; one school did not. Of the twelve schools, four indicated that conferences were held on a formal, regular basis, while eight stated that it was on an as needed basis.

Table 11 shows the amount of achievement growth during 1983-84 of students in programs who conferenced with the classroom teacher on a formal or informal basis regarding individual student performance. Results for the one program which did not hold conferences are not included because conference effect could not be separated from program effects. The results for schools that did conference are inconclusive, so no interpretations are made.

Question 3. Is your program providing instruction in goals not covered by materials from Prescription Learning?

Six schools used supplemental materials. No conclusions could be drawn about the effects of supplemental materials from the available data.

Table 11

Reading and Math GROW Means for
First-Year Prescription Learning Students by Methods
of Conferencing about Individual Student Performance

	Reading	Math
Formal, Regular	0.96	1.19
	(134)	(110)
Informal, Irregular	0.20	1.54
	(262)	(286)

Question 4. Are sufficient materials available to meet student skill deficiencies which are identified on the prescriptions?

Seven schools responded that sufficient materials were available, while six schools thought that sufficient materials were not available to meet student skill deficiencies. Five of the six schools that thought that sufficient materials were not available were the same schools that provided additional materials to supplement the Prescription Learning goal structure.

Question 5. Are all students receiving Teacher Directed Instruction (TDI)?

All schools, except one, indicated that all students received teacher directed instruction. The one school where some students did not receive TDI indicated that Prescription Learning served the purpose of primary skill development in the planned program created for the students and that TDI was part of classroom activities.

Student Survey

A short survey of opinions concerning the Prescription Learning program was given to students in Prescription Learning. Data were available from 11 of the 13 Prescription schools. Of the two schools from which data was not available, one found the questionnaire confusing for students and did not return the students' responses and one did not follow directions. Table 12 shows the questions asked and the number and percent of students answering each response.

Table 12

Student Survey Responses

Survey Question		Responses (Number and Percent)					
		Computer	D/H Reader	Card Reader	Cassette	Indep. Study	TDI
1. Which lab station do you like the most?	N	401	59	8	11	45	34
	%	72	11	1	2	8	6
2. Which lab station helps you learn the most?	N	250	56	18	24	75	135
	%	45	10	3	4	13	24
3. Which lab station helps you remember the most?	N	211	62	24	57	88	111
	%	38	11	4	10	16	20

		Yes	No
4. Do you like working in lab more than the regular classroom?	N	408	149
	%	73	27
5. Does lab make schoolwork easier for you to learn?	N	452	101
	%	82	18
6. Do you remember more of what you learn in lab than in the regular classroom?	N	323	228
	%	59	41

The results show that students preferred the computer station over other stations in Prescription Learning and viewed it as helping them learn and remember more than other stations. In addition, students liked working in the lab more than in the regular classroom, think it makes school work easier for them, and helps them remember more of what they learn. Teacher Directed Instruction was also viewed positively by students. Although only a small minority said they liked TDI the most, about one-quarter of the students reported that TDI was the method from which they learned the most and remembered the most. In summary, the students view the computer as the most positive aspect of the Prescription Learning lab and the Prescription Learning program as a positive aspect of their school experience.

FINDINGS

The findings are based on student achievement data from 12 schools where Prescription Learning was used in conjunction with the Chapter I program. Only students having more than 15 weeks and 70 minutes per week in the program were included in the analyses.

1. Overall, the Fall-Spring achievement gains of first-year Prescription Learning students were greater during their project year (1983-84) than their pre-project year (1982-83). However, there were some significant differences across schools and grades indicating that the effect is not uniform.
2. Both Prescription Learning and other Chapter I treatments assisted students in making achievement gains. Data comparing Prescription Learning students and all Chapter I students in grades 3-8 revealed that Prescription Learning achieved gains which were slightly larger, but the difference was not statistically significant.
3. When comparing the performance of students who participated in Prescription Learning for only one year in 1983-84 with students in the program for only one year in 1981-82 and in 1982-83, students in 1983-84 showed more improvement in their project year over their pre-project year, but the differences across years were not significant.
4. Prescription Learning students who participated in the program for two full years (1982-83 and 1983-84) continued to grow in achievement performance but at a rate slightly lower than the one-year students of 1983-84.
5. Results for three-year students (1981-82 through 1983-84) were mixed. For reading, students who participated in Prescription Learning for three full years demonstrated an equivalent rate of growth during 1983-84 as during 1982-83, growth which was less than the District average to a nonsignificant degree. In math, three-year students showed less growth in 1983-84 than in 1982-83. However, the growth for each of these years taken separately was greater than the District average, a difference which was significant during 1982-83.

6. Data comparing the gains of Chapter I second-grade students in Prescription Learning with gains of other Chapter I second graders showed equivalent performances.
7. A survey of attitudes of Prescription Learning students showed that they liked the computer best of all stations in the program, and that they learned the most and remembered the most from the computers. Next to the computers, students felt they learned the most and remembered the most from Teacher Directed Instruction. Students reported that the Prescription Learning program was a positive aspect of the school experience.
8. A second study which compared the curriculum goals of Prescription Learning with the Portland Levels Achievement Tests' goal structure supported the findings of the first study reported in the 1982-83 evaluation report; i.e., "there is a reasonable match for reading goals ... and an extremely poor correspondence in language usage." A matching study was not conducted for mathematics.

RECOMMENDATIONS

1. Prescription Learning should be considered by schools as an option along with other District programs, particularly for Chapter I and other educationally disadvantaged students. Relative cost, curriculum match, ease of operation, student interest, etc., should be taken into account.

2. The curriculum covered by the Prescription Learning materials should be supplemented to be more closely matched with the District curriculum goals, especially in mathematics.

APPENDIX A

New Prescription Learning
Primary Level Reading Continuum

APPENDIX A

Below is a listing of the new primary reading skills continuums.

Level K Reading

K-01 Recognizes and Matches Like Shapes
K-02 Associates Words to Pictures
K-03 Recognizes Pictured Position Words
K-04 Identifies Letters of the Alphabet
K-05 Recognizes Initial Consonant Sounds
K-06 Identifies Pictured Rhyming Words
K-07 Listens for Comprehension (Main Idea)
K-08 Numbers Pictures in Story Sequence

Level 1 Reading

A-01 Recognizes Initial Consonant Sounds
A-02 Recognizes Final Consonant Sounds
A-03 Recognizes Dolch Sight Words
A-04 Recognizes Initial Consonant Blends
A-05 Identifies Written Rhyming Words
A-06 Identifies Compound Words
A-07 Identifies Contractions
A-08 Identifies Words with Endings
A-09 Choose Correct Word for Sentence Completion
A-10 Identifies the Main Idea of a Picture (Title and Topic Sentence)
A-11 Recognizes Key Details in a Sentence
A-12 Reorders Pictured Sequence
A-13 Recognizes Correctly Spelled Words
A-14 Recognizes Alphabet Sequence

Level 2 Reading

B-01 Recognizes Long Vowel Sounds
B-02 Recognizes Short Vowel Sounds
B-03 Recognizes Two-Letter Consonant Combinations
B-04 Recognizes Sounds of Vowel Teams
B-05 Recognizes Rhyming Words
B-06 Recognizes Compound Words
B-07 Recognizes Contractions
B-08 Recognizes Words with Endings
B-09 Chooses Correct Word for Sentence Completion
B-10 Identifies Multiple Meaning Words
B-11 Identifies Synonyms and Antonyms
B-12 Identifies Main Idea through Titling
B-13 Identifies Key Details in a Passage
B-14 Identifies Story Sequence as First, Second, and Last
B-15 Draws Conclusions and Predicts Outcome
B-16 Alphabetizes to the Second Letter
B-17 Classifies Words by Like Category
B-18 Recognizes Correctly Spelled Words

Level 3 Reading

C-01 Recognizes Long Vowel Sounds
C-02 Recognizes Short Vowel Sounds
C-03 Recognizes Two- and Three-Letter Consonant Combinations
C-04 Recognizes Ending Consonant Combinations
C-05 Recognizes Sounds of Vowel Teams
C-06 Recognizes Compound Words
C-07 Recognizes Contractions
C-08 Recognizes Noun and Verb Endings
C-09 Identifies Word Meanings through Context Clues
C-10 Identifies Multiple Meaning Words
C-11 Identifies Synonyms and Antonyms
C-12 Identifies Main Idea through Titling
C-13 Identifies Key Details in a Passage
C-14 Identifies Story Sequence as First, Second, and Last
C-15 Draws Conclusion and Predicts Outcome
C-16 Identifies Nouns and Verbs
C-17 Capitalizes Names of People and Places
C-18 Correctly Punctuates at the End of a Sentence
C-19 Alphabetizes to the Second Letter
C-20 Recognizes Correctly Spelled Words

APPENDIX B

Evaluations of PLC
Reading Materials

APPENDIX B

Evaluations of PLC Reading Materials

	Class II Class II Plus	Time On	Other PCL	SRA	MCP	BFA	Take Home
Goal 1: Word Meaning							
1. Context clues	no (words not in context)	yes	Moti-yes FF-yes RC-yes	SA-no Kit-yes	yes	yes	yes
2. Synonyms, etc.	yes	yes	Moti-yes FFF-yes RC-yes	SA-no Kit-yes	yes	Syn-yes Ant-no Hom-no	yes
3. Component structures	yes	yes	Moti-yes FFF-yes RC-yes	SA-yes Kit-yes	yes	no	yes
4. Multiple meanings	no	yes	Moti-yes FFF-yes RC-yes	no	no	no	yes

*Yes = PLC material does prepare child to master the correlated curriculum objective and PALT goal
*No = There is a disparity between the listed material and the curriculum objective and PALT goal

APPENDIX B (continued)

Evaluations of PLC Reading Materials

	Class II Class II Plus	Time On	Other PCL	SRA	MCP	BFA	Take Home
Goal 2: Literal Comprehension							
1. Recall details	G2-yes	yes	Moti-yes FFF-yes RC-no	SA-yes Kit-yes	yes	no	yes
2. Interpret directions	yes*	yes*	yes*	yes*	yes*	yes*	yes*
3. Sequencing details	C3-yes	yes	Moti-yes FFF-yes RC-no	SA-yes Kit-yes	yes	no	yes
4. Classify facts, ideas, etc.	G6-yes	no (comparisons, contrasts only)	Moti-no FFF-no RC-no	no	no	no	no
5. Recall stated main idea	E1-yes	yes	Moti-yes FFF-yes	no	yes	no	yes

*Yes = PLC material does prepare child to master the correlated curriculum objective and PALT goal
*No = There is a disparity between the listed material and the curriculum objective and PALT goal

APPENDIX B (continued)

Evaluations of PLC Reading Materials

	Class II Class II Plus	Time On	Other PCL	SRA	MCP	BFA	Take Home
Goal 3: Interpretive Comprehension							
1. Draw inferences	F4-yes	yes	Moti-yes FFF-yes	no	yes	no	yes
2. Recognizing cause and effect	yes	yes	Moti-yes FFF-no	no	no	no	yes
3. Predicting outcomes	yes	yes	Moti-no	no	yes	no	yes
4. Summarization	G1-yes	no	Moti-no FFF-yes	no	no	no	yes
Goal 4: Evaluative Comprehension							
1. Distinguish between fact and opinion	yes	yes	Moti-yes FFF-yes	no	yes	no	yes
2. Recognize elements of persuasion	no	no	no	no	no	no	no
3. Evaluate internal and external validity	no	no	no	no	no	no	no
4. Evaluate conclusions and resolutions	no	no	no	no	no	no	no
5. Detect bias	no	no	no	no	no	no	no

*Yes = PLC material does prepare child to master the correlated curriculum objective and PALT goal
*No = There is a disparity between the listed material and the curriculum objective and PALT goal

APPENDIX C

Tables Presenting Standard
Deviation Means, GROW, and RATE of Growth for
Prescription Learning and Chapter I Participants by Grade

Table C.1

Reading Standard Deviation GROW and RATE Means
for One-Year, Two-Year and Three-Year,
Prescription Learning Students;
One-Year and Two-Year Chapter I Students; and
Two-Year Chapter I/Prescription Learning Students by Grade

	Fall 1982	Spring 1983	Fall 1983	Spring 1984	GROW 1982-83	GROW 1983-84	RATE
Grade 3							
Prescription Learning							
One-Year	-1.91	-1.95	-2.63	-2.87	-0.15	-0.55	--
	(10)	(10)	(24)	(24)	(10)	(24)	
Two-Year	-2.96	-2.29	0.92	-1.53	1.72	1.45	-0.52
	(13)	(13)	(1)	(1)	(13)	(1)	(1)
Three-Year	--	--	--	--	--	--	--
Total	-2.50	-2.14	-2.49	-2.82	0.91	-0.47	-0.52
	(23)	(23)	(25)	(25)	(23)	(25)	(1)
Chapter I							
One-Year	-2.06	-2.68	-3.39	-3.04	-1.64	0.84	-0.59
	(77)	(77)	(143)	(143)	(77)	(143)	(1)
Two-Year	-3.12	-2.90	-3.40	-3.12	0.51	0.62	-1.40
	(299)	(298)	(294)	(297)	(298)	(297)	(11)
Total	-2.90	-2.85	-3.40	-3.09	0.07	0.69	-1.33
	(376)	(275)	(434)	(440)	(375)	(440)	(12)
Chapter I/Prescription Learning							
One-Year (each)	-2.66	-2.65	-4.09	-3.62	-0.02	1.11	--
	(32)	(32)	(43)	(43)	(32)	(43)	

Table C.1 (continued)

Reading Standard Deviation GROW and RATE Means
for One-Year, Two-Year and Three-Year,
Prescription Learning Students;
One-Year and Two-Year Chapter I Students; and
Two-Year Chapter I/Prescription Learning Students by Grade

	Fall 1982	Spring 1983	Fall 1983	Spring 1984	GROW 1982-83	GROW 1983-84	RATE
Grade 4							
Prescription Learning							
One-Year	-2.25	-3.02	-2.85	-2.20	-2.29	2.05	3.12
	(10)	(10)	(16)	(16)	(10)	(16)	(9)
Two-Year	-3.18	-3.56	-3.04	-2.07	-1.14	3.00	2.52
	(22)	(22)	(13)	(13)	(22)	(13)	(11)
Three-Year	--	--	--	--	--	--	--
Total	-2.88	-3.39	-2.94	-2.14	-1.50	-0.21	2.79
	(32)	(32)	(29)	(29)	(32)	(29)	(20)
Chapter I							
One-Year	-2.09	-2.50	-2.78	-2.57	-1.24	0.69	1.82
	(60)	(60)	(100)	(100)	(60)	(100)	(66)
Two-Year	-3.09	-2.97	-2.99	-2.80	0.35	0.67	-0.02
	(242)	(243)	(273)	(270)	(243)	(270)	(225)
Total	-2.89	-2.88	-2.93	-2.74	0.04	0.68	0.40
	(302)	(303)	(373)	(370)	(303)	(370)	(291)
Chapter I/Prescription Learning							
One-Year (each)	-2.82	-3.28	-3.14	-3.18	-1.40	-0.09	-0.05
	(30)	(30)	(36)	(36)	(30)	(36)	(30)

Table C.1 (continued)

Reading Standard Deviation GROW and RATE Means
for One-Year, Two-Year and Three-Year,
Prescription Learning Students;
One-Year and Two-Year Chapter I Students; and
Two-Year Chapter I/Prescription Learning Students by Grade

	Fall 1982	Spring 1983	Fall 1983	Spring 1984	GROW 1982-83	GROW 1983-84	RATE
Grade 5							
Prescription Learning							
One-Year	-2.61	-2.91	-2.74	-2.60	-1.16	0.46	3.21
	(19)	(18)	(17)	(17)	(18)	(17)	(10)
Two-Year	-2.75	-3.57	-3.42	-2.73	-2.87	2.37	2.93
	(8)	(8)	(22)	(22)	(8)	(22)	(18)
Three-Year	-3.82	-2.96	--	--	-2.93	--	--
	(1)	(1)			(1)		
Total	-2.69	-3.00	-3.12	-2.67	-1.51	1.54	3.03
	(28)	(28)	(39)	(39)	(27)	(39)	(28)
Chapter I							
One-Year	-2.83	-2.81	-2.46	-1.90	0.04	1.93	2.92
	(70)	(69)	(90)	(90)	(69)	(90)	(54)
Two-Year	-3.42	-3.39	-2.79	-2.65	0.09	0.46	0.11
	(164)	(163)	(238)	(238)	(163)	(238)	(195)
Total	-3.24	-3.22	-2.70	-2.44	0.08	0.86	0.69
	(234)	(232)	(328)	(328)	(232)	(328)	(259)
Chapter I/Prescription Learning							
One-Year (each)	-2.53	-2.33	-3.04	-3.05	0.68	-0.05	1.43
	(18)	(18)	(34)	(34)	(18)	(34)	(26)

Table C.1 (continued)

Reading Standard Deviation GROW and RATE Means
for One-Year, Two-Year and Three-Year,
Prescription Learning Students;
One-Year and Two-Year Chapter I Students; and
Two-Year Chapter I/Prescription Learning Students by Grade

	Fall 1982	Spring 1983	Fall 1983	Spring 1984	GROW 1982-83	GROW 1983-84	RATE
Grade 6							
Prescription Learning							
One-Year	-1.63	-1.96	-2.85	-2.91	-0.87	-0.22	0.28
	(19)	(19)	(21)	(21)	(19)	(21)	(15)
Two-Year	-3.64	-3.43	-3.00	-2.83	0.83	0.69	4.12
	(29)	(29)	(8)	(8)	(29)	(8)	(7)
Three-Year	-4.85	-5.14	-4.35	-5.15	-1.17	-3.12	-5.46
	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Total	-2.89	-2.89	-2.94	-2.96	0.13	-0.07	1.20
	(49)	(49)	(30)	(30)	(49)	(30)	(23)
Chapter I							
One-Year	-2.45	-2.66	-2.58	-2.33	-0.72	1.03	0.98
	(71)	(71)	(88)	(88)	(71)	(88)	(56)
Two-Year	-3.50	-3.57	-2.99	-3.00	-0.23	-0.03	-0.48
	(184)	(184)	(162)	(161)	(184)	(161)	(130)
Total	-3.21	-3.32	-2.85	-2.76	-0.37	0.35	-0.04
	(255)	(255)	(250)	(249)	(255)	(249)	(186)
Chapter I/Prescription Learning							
One-Year (each)	-3.25	-3.16	-2.60	-3.11	0.33	-1.99	-3.29
	(12)	(12)	(20)	(20)	(12)	(20)	(16)

Table C.1 (continued)

Reading Standard Deviation GROW and RATE Means
for One-Year, Two-Year and Three-Year,
Prescription Learning Students;
One-Year and Two-Year Chapter I Students; and
Two-Year Chapter I/Prescription Learning Students by Grade

	Fall 1982	Spring 1983	Fall 1983	Spring 1984	GROW 1982-83	GROW 1983-84	RATE
Grade 7							
Prescription Learning							
One-Year	-2.02	-2.38	-3.24	-2.81	-1.63	1.75	4.00
	(28)	(29)	(33)	(33)	(29)	(33)	(16)
Two-Year	-3.61	-3.57	-3.35	-3.02	0.19	1.34	0.19
	(17)	(17)	(30)	(30)	(17)	(30)	(27)
Three-Year	-3.23	-3.46	-3.76	-4.42	-1.04	-2.72	1.72
	(25)	(25)	(2)	(2)	(25)	(2)	(2)
Total	-2.84	-3.05	-3.31	-2.96	-0.99	1.42	1.61
	(70)	(71)	(65)	(65)	(71)	(65)	(45)
Chapter I							
One-Year	-2.92	-2.95	-3.00	-2.89	-0.23	0.46	1.81
	(60)	(61)	(95)	(95)	(61)	(95)	(58)
Two-Year	-3.20	-3.23	-3.20	-3.21	-0.15	0.19	0.17
	(156)	(156)	(171)	(171)	(156)	(170)	(145)
Total	-3.12	-3.15	-3.13	-3.10	-0.17	0.29	0.64
	(216)	(217)	(266)	(266)	(216)	(265)	(203)
Chapter I/Prescription Learning							
One-Year (each)	-2.34	-2.52	-2.99	-3.04	-0.82	-0.22	0.44
	(9)	(9)	(15)	(15)	(9)	(15)	(11)

Table C.1 (continued)

Reading Standard Deviation GROW and RATE Means
for One-Year, Two-Year and Three-Year,
Prescription Learning Students;
One-Year and Two-Year Chapter I Students; and
Two-Year Chapter I/Prescription Learning Students by Grade

	Fall 1982	Spring 1983	Fall 1983	Spring 1984	GROW 1982-83	GROW 1983-84	RATE
Grade 8							
Prescription Learning							
One-Year	--	--	-2.41	-2.48	--	-0.38	0.79
			(33)	(33)		(33)	(27)
Two-Year	--	--	-3.82	-3.48	--	1.60	1.06
			(18)	(18)		(18)	(15)
Three-Year	--	--	-3.17	-3.32	--	0.78	-0.08
			(24)	(24)		(24)	(24)
Total	--	--	-2.99	-2.99	--	0.47	0.54
			(75)	(75)		(75)	(66)
Chapter I							
One-Year	-2.95	-3.56	-2.96	-2.97	-2.65	-0.08	0.05
	(57)	(57)	(74)	(74)	(57)	(74)	(51)
Two-Year	-3.44	-3.90	-3.11	-3.06	-2.03	0.20	0.14
	(89)	(90)	(146)	(147)	(90)	(147)	(125)
Total	-3.25	-3.77	-3.06	-3.03	-2.27	0.11	0.11
	(146)	(147)	(220)	(221)	(147)	(221)	(176)
Chapter I/Prescription Learning							
One-Year (each)	--	--	-2.60	-2.29	--	1.46	0.94
			(12)	(12)		(12)	(8)

Table C.2

Math Standard Deviation GROW and RATE Means
for One-Year, Two-Year and Three-Year,
Prescription Learning Students;
One-Year and Two-Year Chapter I Students; and
Two-Year Chapter I/Prescription Learning Students by Grade

	Fall 1982	Spring 1983	Fall 1983	Spring 1984	GROW 1982-83	GROW 1983-84	RATE
Grade 3							
Prescription Learning							
One-Year	-1.43	-3.76	-3.07	-1.86	-4.60	2.27	--
	(1)	(1)	(12)	(12)	(1)	(12)	
Two-Year	-2.95	-2.51	--	--	0.85	--	--
	(12)	(12)			(12)		
Three-Year	--	--	--	--	--	--	--
Total	-2.83	-2.61	-3.07	-1.86	0.43	2.27	--
	(13)	(13)	(12)	(12)	(13)	(12)	
Chapter I							
One-Year	-2.02	-2.68	-3.13	-2.12	-1.30	1.89	--
	(64)	(64)	(111)	(111)	(64)	(111)	
Two-Year	-3.01	-2.93	-3.20	-3.08	0.16	0.20	-3.24
	(231)	(231)	(186)	(187)	(231)	(187)	(6)
Total	-2.80	-2.88	-3.17	-2.72	-0.16	0.83	-3.24
	(295)	(295)	(297)	(298)	(295)	(295)	(6)
Chapter I/Prescription Learning							
One-Year (each)	-2.90	-2.93	-3.44	-2.73	-0.05	1.34	-11.13
	(24)	(24)	(15)	(15)	(24)	(15)	(1)

Table C.2 (continued)

Math Standard Deviation GROW and RATE Means
for One-Year, Two-Year and Three-Year,
Prescription Learning Students;
One-Year and Two-Year Chapter I Students; and
Two-Year Chapter I/Prescription Learning Students by Grade

	Fall 1982	Spring 1983	Fall 1983	Spring 1984	GROW 1982-83	GROW 1983-84	RATE
Grade 4							
Prescription Learning							
One-Year	-3.18	-3.31	-3.62	-1.47	-0.32	5.26	13.09
	(14)	(14)	(7)	(7)	(14)	(7)	(1)
Two-Year	-2.60	-3.81	-2.49	-1.59	-2.84	2.21	1.20
	(20)	(20)	(11)	(11)	(20)	(11)	(11)
Three-Year	--	--	--	--	--	--	--
Total	-2.84	-3.60	-2.93	-1.54	-1.00	3.40	2.19
	(34)	(34)	(18)	(18)	(34)	(18)	(12)
Chapter I							
One-Year	-2.66	-2.76	-3.01	-2.03	-0.22	2.41	3.16
	(62)	(62)	(90)	(90)	(62)	(90)	(54)
Two-Year	-3.24	-3.27	-2.99	-2.55	-0.05	1.13	0.48
	(188)	(188)	(229)	(228)	(188)	(228)	(189)
Total	-3.10	-3.14	-3.00	-2.40	-0.09	1.49	1.08
	(250)	(250)	(319)	(318)	(250)	(318)	(243)
Chapter I/Prescription Learning							
One-Year (each)	-3.36	-3.18	-3.25	-3.19	0.44	0.16	-0.38
	(20)	(20)	(24)	(24)	(20)	(24)	(20)

Table C.2 (continued)

Math Standard Deviation GROW and RATE Means
for One-Year, Two-Year and Three-Year,
Prescription Learning Students;
One-Year and Two-Year Chapter I Students; and
Two-Year Chapter I/Prescription Learning Students by Grade

	Fall 1982	Spring 1983	Fall 1983	Spring 1984	GROW 1982-83	GROW 1983-84	RATE
Grade 5							
Prescription Learning							
One-Year	-2.27	-2.28	-3.14	-2.45	-0.05	1.50	2.44
	(15)	(15)	(28)	(27)	(14)	(27)	(15)
Two-Year	-3.57	-3.15	-2.97	-2.29	0.98	1.51	3.55
	(16)	(16)	(19)	(19)	(16)	(19)	(18)
Three-Year	-3.25	-2.08	--	--	--	--	--
	(1)	(1)					
Total	-2.96	-2.71	-3.07	-3.05	0.50	1.50	3.05
	(32)	(32)	(37)	(36)	(30)	(46)	(33)
Chapter I							
One-Year	-3.23	-2.91	-3.44	-2.30	0.76	2.50	2.12
	(69)	(67)	(105)	(104)	(67)	(104)	(57)
Two-Year	-3.51	-3.14	-2.93	-2.61	0.86	0.65	0.68
	(166)	(166)	(191)	(189)	(166)	(189)	(152)
Total	-3.43	-3.07	-3.11	-2.50	0.83	1.31	1.07
	(235)	(233)	(296)	(293)	(233)	(293)	(209)
Chapter I/Prescription Learning							
One-Year (each)	-2.60	-2.47	-3.25	-2.72	0.30	1.18	0.28
	(21)	(21)	(28)	(28)	(21)	(28)	(21)

Table C.2 (continued)

Math Standard Deviation GROW and RATE Means
for One-Year, Two-Year and Three-Year,
Prescription Learning Students;
One-Year and Two-Year Chapter I Students; and
Two-Year Chapter I/Prescription Learning Students by Grade

	Fall 1982	Spring 1983	Fall 1983	Spring 1984	GROW 1982-83	GROW 1983-84	RATE
Grade 6							
Prescription Learning							
One-Year	-2.76	-2.93	-2.81	-2.74	-0.36	0.32	0.28
	(26)	(26)	(20)	(21)	(26)	(21)	(12)
Two-Year	-3.27	-3.14	-3.37	-3.21	0.42	0.56	-0.44
	(36)	(36)	(17)	(17)	(36)	(17)	(15)
Three-Year	-3.59	-3.10	-2.79	-2.91	1.54	-0.40	-3.44
	(3)	(3)	(1)	(1)	(3)	(1)	(1)
Total	-3.08	-3.05	-3.06	-3.03	0.16	0.41	-0.24
	(65)	(65)	(38)	(38)	(65)	(39)	(28)
Chapter I							
One-Year	-3.13	-3.34	-3.30	-2.62	-0.54	2.28	0.79
	(69)	(69)	(102)	(101)	(69)	(101)	(53)
Two-Year	-3.57	-3.44	-3.24	-2.98	0.44	0.89	0.68
	(165)	(164)	(164)	(164)	(164)	(164)	(152)
Total	-3.44	-3.41	3.26	-2.84	0.15	1.42	0.71
	(234)	(233)	(266)	(265)	(233)	(265)	(205)
Chapter I/Prescription Learning							
One-Year (each)	-3.94	-3.29	-2.79	-2.96	2.04	-0.59	-0.45
	(15)	(15)	(27)	(27)	(15)	(27)	(20)

Table C.2 (continued)

Math Standard Deviation GROW and RATE Means
for One-Year, Two-Year and Three-Year,
Prescription Learning Students;
One-Year and Two-Year Chapter I Students; and
Two-Year Chapter I/Prescription Learning Students by Grade
Math Standard Deviation Means

	Fall 1982	Spring 1983	Fall 1983	Spring 1984	GROW 1982-83	GROW 1983-84	RATE
Grade 7							
Prescription Learning							
One-Year	-2.49	-2.71	-3.61	-3.13	-1.07	1.82	3.67
	(35)	(36)	(39)	(39)	(36)	(39)	(21)
Two-Year	-3.62	-3.43	-3.58	-3.19	0.98	1.47	1.33
	(17)	(17)	(35)	(35)	(17)	(35)	(34)
Three-Year	-3.64	-3.03	-2.51	-1.91	-3.06	2.31	1.29
	(23)	(23)	(2)	(2)	(23)	(2)	(2)
Total	-3.10	-2.97	-3.53	-3.12	-1.21	1.67	2.19
	(75)	(76)	(76)	(76)	(76)	(76)	(57)
Chapter I							
One-Year	-2.92	-3.02	-3.67	-3.46	-0.52	0.82	1.67
	(79)	(81)	(96)	(96)	(81)	(96)	(61)
Two-Year	-3.47	-3.08	-3.79	-3.48	1.93	1.23	0.30
	(143)	(144)	(147)	(149)	(144)	(149)	(130)
Total	-3.27	-3.06	-3.74	-3.47	1.05	1.07	0.74
	(222)	(225)	(243)	(245)	(225)	(245)	(191)
Chapter I/Prescription Learning							
One-Year (each)	-3.07	-2.74	-4.05	-2.93	1.68	4.32	0.06
	(12)	(12)	(15)	(15)	(12)	(15)	(14)

Table C.2 (continued)

Math Standard Deviation GROW and RATE Means
for One-Year, Two-Year and Three-Year,
Prescription Learning Students;
One-Year and Two-Year Chapter I Students; and
Two-Year Chapter I/Prescription Learning Students by Grade

	Fall 1982	Spring 1983	Fall 1983	Spring 1984	GROW 1982-83	GROW 1983-84	RATE
Grade 8							
Prescription Learning							
One-Year	--	--	-2.95	-2.58	--	1.71	1.55
			(40)	(40)		(40)	(34)
Two-Year	-1.90	-3.31	-3.90	-3.05	-5.69	3.90	2.72
	(1)	(1)	(17)	(17)	(1)	(17)	(16)
Three-Year	--	--	-3.39	-3.26	--	0.61	-1.68
			(24)	(24)		(24)	(23)
Total	-1.90	-3.31	-3.28	-2.88	-5.69	1.84	0.79
	(1)	(1)	(81)	(81)	(1)	(81)	(73)
Chapter I							
One-Year	-3.23	-3.38	-3.32	-2.90	-0.59	1.98	1.09
	(60)	(60)	(103)	(105)	(60)	(105)	(69)
Two-Year	-4.33	-3.92	3.53	-3.14	1.70	1.75	0.13
	(49)	(49)	(144)	(144)	(49)	(144)	(122)
Total	-3.72	-3.62	-3.44	-3.04	0.44	1.85	0.48
	(109)	(109)	(247)	(249)	(109)	(249)	(191)
Chapter I/Prescription Learning							
One-Year (each)	-5.96	-6.28	-3.10	-2.73	-1.27	1.69	-0.53
	(1)	(1)	(19)	(19)	(1)	(19)	(12)